Laboratory Techniques Assignment Sheet

Section 1: Safety Information

According to the chemical label:

1. What is the chemical formula for this chemical? _____

2. What is the volume of the chemical in this container? _____

3. What 3 things can be worn to protect the user from this chemical?

_____ _____ _____

According to the MSDS:

4. How long should the eyes be flushed with water? _____

5. Should vomiting be induced? _____

6. Is this chemical a flammability hazard for firefighters? _____

7. Where should this chemical be stored (as opposed to on a shelf)? _____

8. What are three descriptions of this chemical's physical properties?

_____ _____ _____

9. Is it known what would happen if large amounts of this chemical spilled into the environment? _____

Section 2: Making Measurements

1. What is the length and width of this piece of paper? _____ _____

2. How much are the small spaces on your metric ruler worth? _____

3. What is the width of your thumbnail? _____

4. Would your ruler be appropriate to measure the length of a lab table? Why?

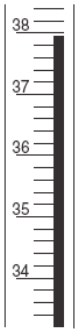
_____

Section 3: Measuring Temperature

Determine the temperature shown on each of the following thermometers. Note the units will all be °C (degrees celsius), but the scale will change.

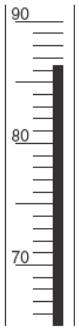
1. _____

2. _____



3. _____

4. _____



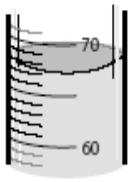
5. _____

6. _____

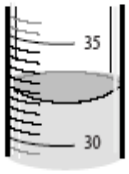
Section 4: Measuring Liquid Volumes

Determine the volume of the liquid in each of the graduated cylinders on the right. Note the units will all be in mL (milliliters), but the scale will change. Read to the bottom of the meniscus.

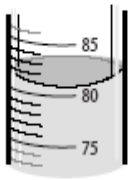
1. _____



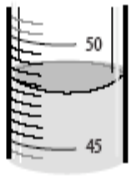
2. _____



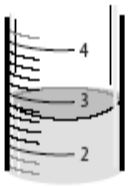
3. _____



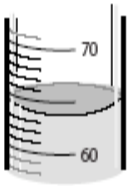
4. _____



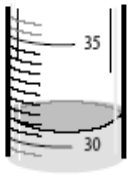
5. _____



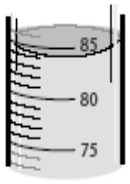
6. _____



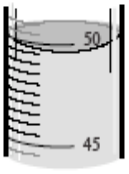
7. _____



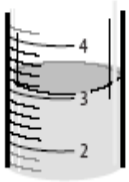
8. _____



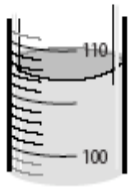
9. _____



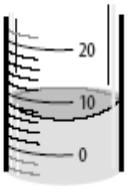
10. _____



11. _____



12. _____



13. What is the scale of each piece of equipment? (0-???)

50 mL graduated cylinder = _____

100 mL graduated cylinder = _____

150 mL beaker = _____

250 mL beaker = _____

400 mL beaker = _____

600 mL beaker = _____

14. What is each space on the equipment worth?

50 mL graduated cylinder = _____

100 mL graduated cylinder = _____

150 mL beaker = _____

250 mL beaker = _____

400 mL beaker = _____

600 mL beaker = _____

15. Which piece of equipment is the most accurate according to your answers on question 14?

_____

16. Try to fill the 600 mL beaker with exactly 200 mL of tap water.
Then pour this water into the 400 mL beaker.
How much water does the 400 mL beaker say you have? _____
Then pour this water into the 250 mL beaker.
How much water does the 250 mL beaker say you have? _____

17. Try to fill the 250 mL beaker with exactly 50 mL of tap water.
Then pour this water into the 150 mL beaker.
How much water does the 150 mL beaker say you have? _____
Then pour this water into the 100 mL graduated cylinder.
How much water does the 100 mL graduated cylinder say you have? _____
Then pour this water into the 50 mL graduated cylinder.
How much water does the 50 mL graduated cylinder say you have? _____

18. Ignoring any water lost in the transfer, why does it seem the amount of water changes in questions 16 and 17?

Section 5: Measuring Solid Volumes

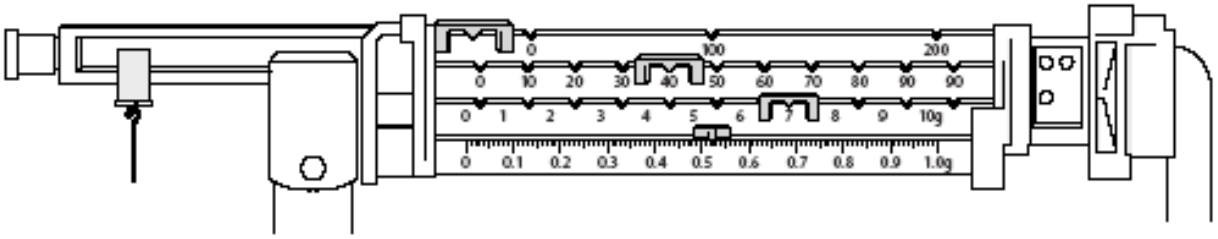
Determine the volume of the three solids using water displacement. Record all measurements and volumes below. Dry off all solids when you are finished.

	5 marbles	10 pennies	20 paper clips
initial water level	_____	_____	_____
final water level	_____	_____	_____
volume of solids	_____	_____	_____

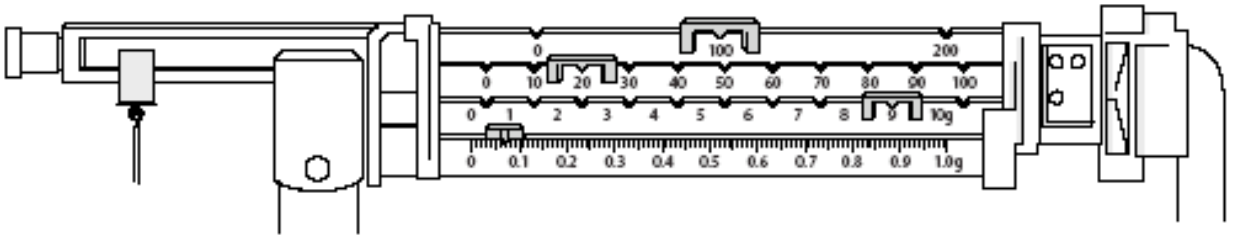
Section 6: Measuring Mass

Determine the mass from the position of the sliding masses on the centigram balances shown below. Note that you must still estimate between the smallest set of lines. Hint: all pictures have the sliders on the lines exactly.

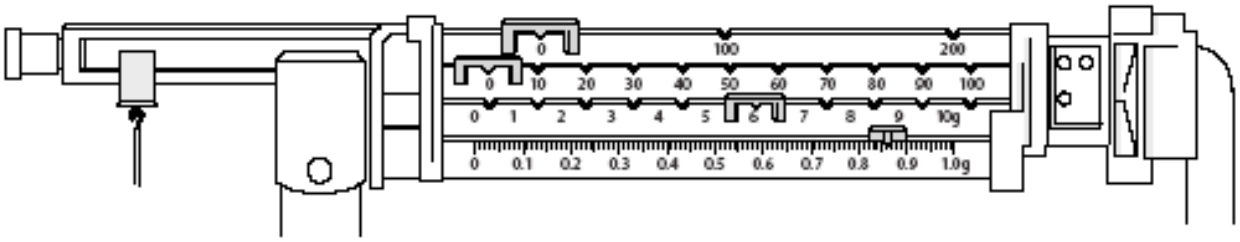
1. The mass of the object would be read as _____.



2. The mass of the object would be read as _____.



3. The mass of the object would be read as _____.



4. Looking at the real balances, what is the range (0-???) of each bar on each of the following balances? (Arm 1 is in the very back, and arm 3 or arm 4 is the very front.)

Triple Beam: arm 1 _____

arm 2 _____

arm 3 _____

Centigram: arm 1 _____

arm 2 _____

arm 3 _____

arm 4 _____

5. What is the smallest space on each of the balances worth?

Triple beam: _____

Centigram: _____

Electronic: _____ (the smallest place shown)

6. Which balance would be the most accurate according to your answers to #5? _____

7. What is the mass of your pencil/pen according to each balance?

Triple beam: _____

Centigram: _____

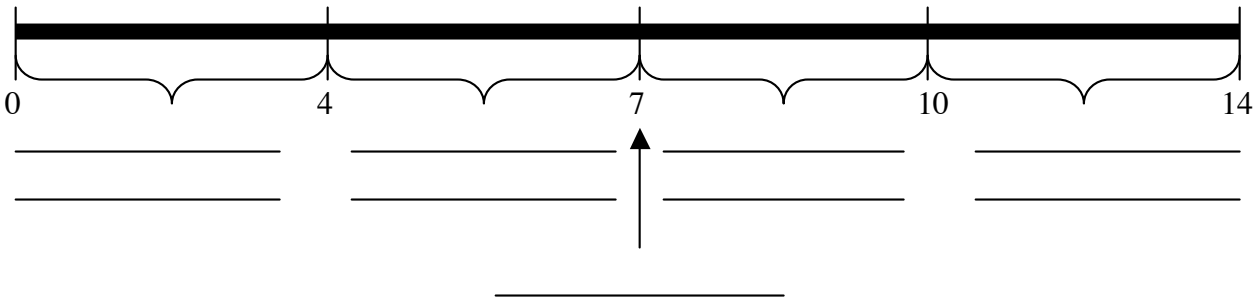
Electronic: _____

8. What is the mass of 150 mL of water according to each balance? Use the 250 mL beaker.

	Triple Beam	Centigram	Electronic
Mass of empty beaker	_____	_____	_____
Mass of beaker & water	_____	_____	_____
Mass of water only	_____	_____	_____

Section 7: pH Testing

1. Fill in the blanks on the pH scale below with the words: "strong acid", "strong base", "weak acid", "weak base", and "neutral".



2. Tear each strip of all the indicator papers into fourths, so that you have 8 pieces of red litmus paper, 8 pieces of blue litmus paper, and 8 pieces of pH paper. Arrange them into rows with the red litmus paper on top, the blue litmus paper in the middle, and the pH paper on the bottom.

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ← red litmus paper

■ ■ ■ ■ ■ ■ ■ ■ ← blue litmus paper

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ← pH paper

Find the 8 samples and using the toothpick place a drop of the sample on each piece of paper (one red, one blue, on pH). Record the resulting color below and determine the pH.

	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	Sample 7	Sample 8
Actual Identity								Unknown
Color of red litmus paper								
Color of blue litmus paper								
Color of pH paper								
pH								

3. The unknown is a duplicate of one of the samples (1-7).
Based on the color changes of the unknown, what is the identity of the unknown? _____

Section 8: Lighting a Laboratory Burner

1. What is the hottest part of the flame? _____
2. Should you put the burner away immediately after use? Why?

_____

Teacher Signature: